

Original Article



Impact of Closure of Medical Colleges due to COVID-19: The Scenario of Online Classes and Learning Outcome in Undergraduate Medical Students.

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Abstract

Background: During Corona virus disease (COVID 19) pandemic all educational institutions including the medical colleges in Bangladesh were closed for more than ten months. In this period all classes for undergraduate medical students like lectures and practical classes were taken by online platform. For this reason, the scenario of online classes and learning outcome need to be assessed among undergraduate medical students during COVID 19 pandemic.

Objective: To find out the scenario of online classes and learning outcome in undergraduate medical students during period of COVID 19 pandemic.

Materials and Methods: An observational study, among different years of MBBS medical students who were exposed to both online and offline classes during COVID pandemic from 2020 -2021. This study was carried out by the Department of Pharmacology and Therapeutics, at Khwaja Yunus Ali Medical College (KYAMC). A total number of 237 medical students from different years were included randomly in this study. Among them 99 male and 138 female medical students participated. To collect data, a questionnaire form was supplied to the participants to fill up. This form contained some demographic criteria, health issues during online classes, internet connectivity issues, problem faced by students, opinion to encourage online classes in future and causal factors of lack of interest. In addition, we also made a comparison between marks obtained in case of online and offline written examinations (SAQ) and oral examinations (SOE).

Results: The result showed that anxiety and depression were developed in 53.59% and 44.30% medical students respectively due to COVID. Eyesight problem was developed in 66.66% medical students due to online classes. 50% students reported the communication gap between patients and students during practical classes. 52.74% medical students did not recommend such type of online classes in future. The comparison between online and offline examinations showed that the results of offline exams were better than online.

Conclusion: During COVID pandemic we used online classes as an alternative teaching-learning process. But we found poor performance in their exams. The students also did not suggest online classes in future.

Key words: COVID 19, Medical colleges, Medical students, Online classes, Learning outcome.

Date of received: 15.06.2023

Date of acceptance: 25.09.2023

DOI: <https://doi.org/10.3329/kyamcj.v14i03.68466>

KYAMC Journal. 2023; 14(03): 145-150.

Introduction

The new Coronavirus disease (COVID 19) began in December 2019 and first broke out in Wuhan, China.¹ COVID 19 causes severe acute respiratory syndrome (SARS-COV-2) which is characterized by pneumonia like symptoms.² Within few weeks it becomes a threat around the world. World Health Organization (WHO) declared COVID 19 as a pandemic. The virus

spread to over 177 countries by March, 2020. To control the situation, World Health Organization (WHO) recommended implementing a strict lockdown rule for safety purposes.³

In Bangladesh, according to the Institute of Epidemiology Disease Control And Research (IEDCR), the spread of this virus was confirmed on 8 march 2020 reported with the first three

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known cases (IEDCR, 2020).⁴ To prevent widespread flow of the Corona virus, The Government of Bangladesh enforced lockdown on 17th March 2020.⁵ Lockdown compelled us to do things in alternative ways. The means of living, like professional activities, schooling, and even health care supporting systems were modified. Distance learning methods were implied to carry on the educational systems as smooth as possible.⁶ In this situation, most of the academic institutions were closed for more than ten months. In the long run this impacted about 39 million students from pre-primary to tertiary levels.⁷

The teaching, learning and training activities were widely affected in medical institutions also. The MBBS undergraduate students were asked to stay at home to ensure social distancing to reduce the spread of virus.⁸ Physical attendance of students in the campus was truly prohibited and we had to switch traditional offline learning to online approach. According to Government instruction, all of our students performed their academic activities without leaving their homes. Every educational institution adjusted to change their modalities of education delivering procedure by considering COVID 19 situation. To follow the COVID-19 preventive measures and distant learning became a part of educational life.⁹

Patterson in his book titled “learning” stated, “in the future, teachers may be able to communicate with their students in Multi-media distance education classrooms for interactive distance education and training” and in today’s scenario this seems true.¹⁰ Now-a-days the daily medical educational activities consists of expert lectures, tutorials, laboratory works and bedside teaching. There is also student’s small group discussion and scope of independent self learning.¹¹ The basic sciences, clinical skill sessions, laboratory practical sessions, faculty and undergraduate students were transitioning to adjust with the online mode of education.¹² Online classes were taken by different online teaching platforms like Zoom, Google classroom, Google Meet etc.¹³

During the implementation of online learning, we noticed many factors that might influence positively or negatively, and interfere with the process. This study according to students perspective aimed to find out what factors could be supportive (positive) or inhibitory (negative) that affect the implementation of productive online learning during COVID-19 situation and the probable differences in learning outcomes.

Materials and Methods

It was an observational study among different years of MBBS medical students who were exposed to both online and offline classes during the COVID pandemic from 2020 – 2021. The study was carried out by the Department of Pharmacology and Therapeutics, Khwaja Yunus Ali Medical College and Hospital (KYAMC), enayetpur, Sirajgonj situated in Bangladesh. Adequate counseling of the participants regarding the importance of this study was done.

A total number of 237 medical students from different years randomly were included in this study. Among them the numbers of male and female were 99 and 138 respectively. At first a questionnaire form was supplied to the participants to fill up. This form contained some demographic criteria like age, gender, nationality, address. Also contained some questions related to online classes like frequency of health issue produced due to online classes, devices used for attending online classes, types of internet service use, problem faced by students regarding online practical classes, internet connectivity issues, Opinion to encourage this online platform for medical studies in future and causal factors of lack of interest in online classes. Students submitted their answers in their choice. They gave multiple answers in some questions. We also made a comparison statistics between the results of online and offline term final examinations in both written and oral parts. Data analysis was performed by Statistical Package for the Social Sciences (SPSS) software package Version 20.0.

Results

Table I shows demographic criteria of medical students. Among 237 participants there were male and female medical students were 41.77% and 58.23% respectively. And also Bangladeshi students were more (60.76%) than international (39.24%).

Table I: Demographic criteria

Criteria	Number of students	Percentage
Gender	Male – 99	41.77%
	Female - 138	58.23%
Address	Bangladeshi - 144	60.76%
	International - 93	39.24%

Table II shows different frequency of psychological illness due to COVID. The highest one was anxiety (53.59%) and then depression (44.30%) and feeling of helplessness (43.46%).

Table II: Psychological illness due to COVID

Criteria	Number of students	Percentage
Anxiety	127	53.59%
Depression	105	44.30%
Feeling of helplessness	103	43.46%
The feeling of guilt due to not helping to infected dearest one	95	40.08%
Feeling of worthlessness	34	14.34%

Table III shows frequency of health issues produced due to online classes. According to this study eyesight problem was developed in 66.66% medical students and headache was developed in 63.71% medical students.

Table III: Frequency of health issues produced due to online classes.

Criteria	Number of students	Percentage
Eyesight problem	158	66.66%
Headache	151	63.71%
Anxiety	76	36.07%
Depression	53	22.36%
Others	43	18.14%

Table IV shows devices are used for attending online classes. Most of the medical students (91.13%) used mobile phone during online classes and only 3.79% medical students used desktop.

Table IV: Devices are used for attending online classes.

Criteria	Number of students	Percentage
Mobile phone	216	91.13%
Laptop	65	27.42%
Tablet including ipad	49	20.67%
Desktop	9	3.79 %

Fig -1 shows types of internet services used by medical students to attend the online classes. Among them 26.27% used cellular data, 25.16% used wifi and 48.57% used the both.

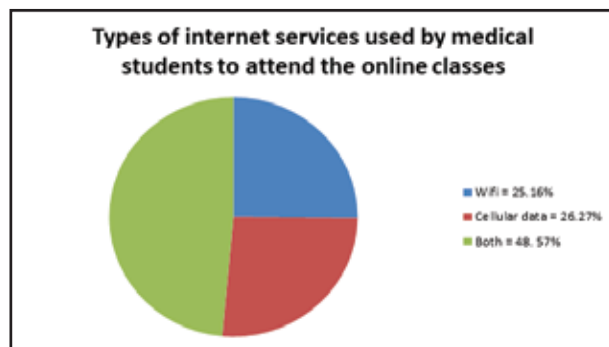


Fig 1: Types of internet services used by medical students to attend the online classes.

Fig 2 shows about internet connecting issues. Most of the medical students (75.10%) faced to problem due to slow speed of internet. There was also abrupt loss of internet activity in 59.07% medical students.

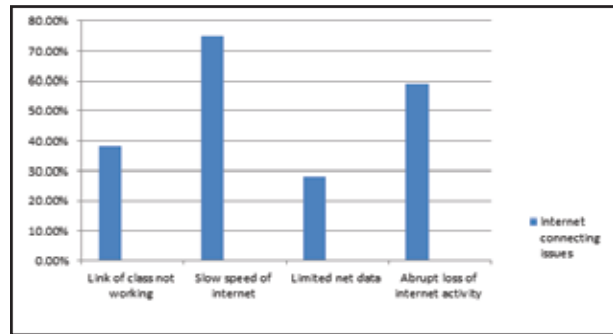


Fig 2: Internet connecting issue.

Fig 3 shows problems faced by students regarding practical classes. Almost 50% students marked the issue of communication gap between patients and students during the classes. And 49% medical students reported lack of motivation in doing the classes.

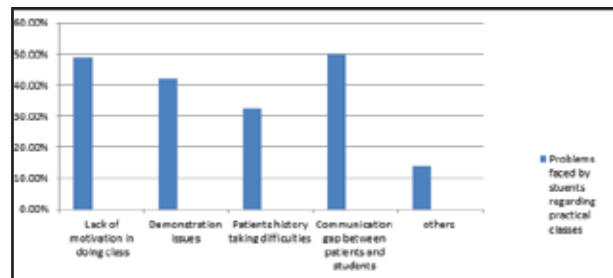


Fig 3: Problems faced by students regarding practical classes.

Fig 4 shows opinion to encourage online classes for medical students in future. Majority of the students (52.74%) did not encourage such type of online classes for medical students in future.

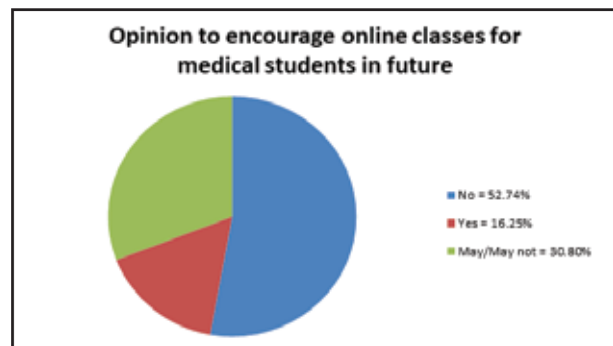


Fig 4: Opinion to encourage online classes for medical students in future.

Fig 5 shows causal factors behind lack of interest in online classes. We found that the main causal factor was no face to face interaction (65.82%) and the second was more theory than clinical case discussion (56.11%)

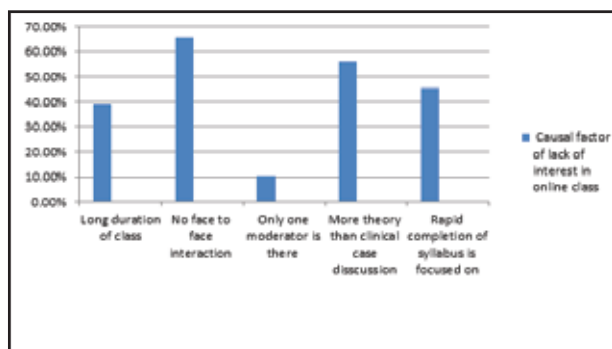


Fig 5: Causal factors behind lack of interest in online classes

Table V shows marks obtained by the medical students in case of online and offline written examinations (SAQ) in term final exams. The study revealed the number of failed students (getting <60% marks) were more in online written (28.47%) in comparison to offline exams (20%). The percentage of obtained marks were also higher in offline exams.

Table VI shows marks obtained by the medical students in case of online and offline oral examinations (SOE) in term final exams. The study revealed the number of failed students (getting <60% marks) were more in online oral (28.47%) in comparison to offline exams (22%). The percentage of obtained marks were also higher offline.

Table V: Marks obtained in case of online and offline written examinations (SAQ) in term finals.

Written exam (SAQ)

SAQ online			SAQ offline		
Marks obtained	Number of Students	Percentage	Marks obtained	Number of Students	Percentage
<60	28	28.47%	<60	20	20%
60 - 69	60	63.15%	60 - 69	54	54%
70 - 79	07	7.36%	70 - 79	25	25%
>80	0	0%	> 80	01	01%

Table VI: Marks obtained in case of online and offline oral examinations (SOE) in term finals.

Oral examination (SOE)

SOE online			SOE offline		
Marks obtained	Number of Students	Percentage	Marks obtained	Number of Students	Percentage
<60	28	28.47%	<60	22	22 %
60 - 69	64	64.21 %	60 - 69	55	55 %
70 - 79	06	6 .31 %	70 - 79	23	23 %
>80	0	0%	> 80	0	0 %

Discussion

In the present study, the used parameters were psychological illness due to COVID, frequency of health issues produced due to online classes, devices used for attending online classes, types of internet service use, problems faced by students regarding practical classes, opinion to encourage online classes for medical students in future, causal factor for lack of internet in online classes and marks obtained in case of online and offline written and oral examinations. The study revealed different frequency of psychological illness due to COVID. The highest one was anxiety reported by 53.59% medical students and then depression (44.30%). Another similar study in Pakistan, anxiety was reported by 74% and moderate to severe depression was reported by 45% medical student's respectively.¹⁴

In the present study health issue problems like eyesight problem was developed in 66.66% medical students and headache, anxiety, depression were developed in 63.71%, 36.07% and 22.36% medical students respectively. Another similar study in India, reported that 29.7% students had a headache. Also eyesight problems, depression, anxiety were developed in 17.2%, 12.9% and 9.3% medical student's respectively.¹⁵

Our study revealed that 91.13% students used mobile phone for attending online classes. Laptop, tablet including ipad, desktop were used by 27.42%, 20.67%, 3.79% medical students respectively. Another similar study in India revealed that most of the students (75.7%) used mobile phone for attending online classes. Also 16.11% students used laptop, 6.6% students used tablet including ipad and 1.5% students used desktop.¹⁶ The comparison shows users of mobile phone is higher in Bangladesh. In our study, 26% medical students used cellular data to attend the online classes. Beside this 25% used wifi and 49% used the both. In comparison to other study, 34% students used the both, 48.8% used cellular data and 17% used wifi.¹⁶

The present study's key question was internet connecting issues. In our study most of the medical students (75.10%) faced to problem due to slow speed of internet. And also abrupt loss of internet activity was reported by 59.07% medical students. Another similar study in India, 44.4% medical students reported the abrupt loss of internet connectivity was the main problem in internet connecting issues and also 31.6% students faced to problem due to slow speed of internet.¹⁷

As per our study, 50% medical students reported the issue of communication gap between patients and students during the practical classes and 49% medical students had lack of motivation during class. Another study found only 7.1% medical students reported the problem of communication gap between patients and students during the classes. 62.7% students marked other issues including demonstration issues, patient history taking difficulties, and hand on exposure issues.¹⁵

In our study most of the students (52.74%) did not recommend such type of online classes for upcoming medical students in future and only 16.25% students recommend this online platform. Another similar study in India, 58.3% medical

students did not recommend this online class for medical students in future and only 13.8% students recommend this.¹⁵ Another key question was causal factor of lack of interest in online classes. We found that the main causal factor was no face to face interaction reported by 65.82% of medical students and the second causal factor was more theory than clinical case discussion (56.11%). Another similar study revealed most of the students reported the main causal factor was long duration of the class (65.5%) and the second causal factor was no face-to-face interaction (38.6%).¹⁷

The study also made a comparison between marks obtained in case of online and offline written examinations (SAQ) and oral examinations (SOE) in term finals. The results showed that the number of failed students (getting <60% marks) were more in online written exams (28.47%) and online oral exams (28.47%) in comparison to offline written exams (20%) and offline oral exams (22%) respectively. The percentage of obtained marks was also higher in offline exams. No other study yet revealed the comparison between online and offline learning outcomes.

Conclusion

The present study found the online teaching-learning process was a temporary way to continue medical education during the COVID pandemic. It served as an alternative way of teaching due to unavoidable circumstances. But the students' opinion was not suggestive to encourage online classes for medical students in the future. The learning outcome also found poor performance during online examinations.

Acknowledgment

We acknowledge our heartiest gratitude towards the Principal, Vice-principal, all phase coordinators, HOD and other teaching staffs from different phases for their kind co-operation regarding the study.

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